NEWS

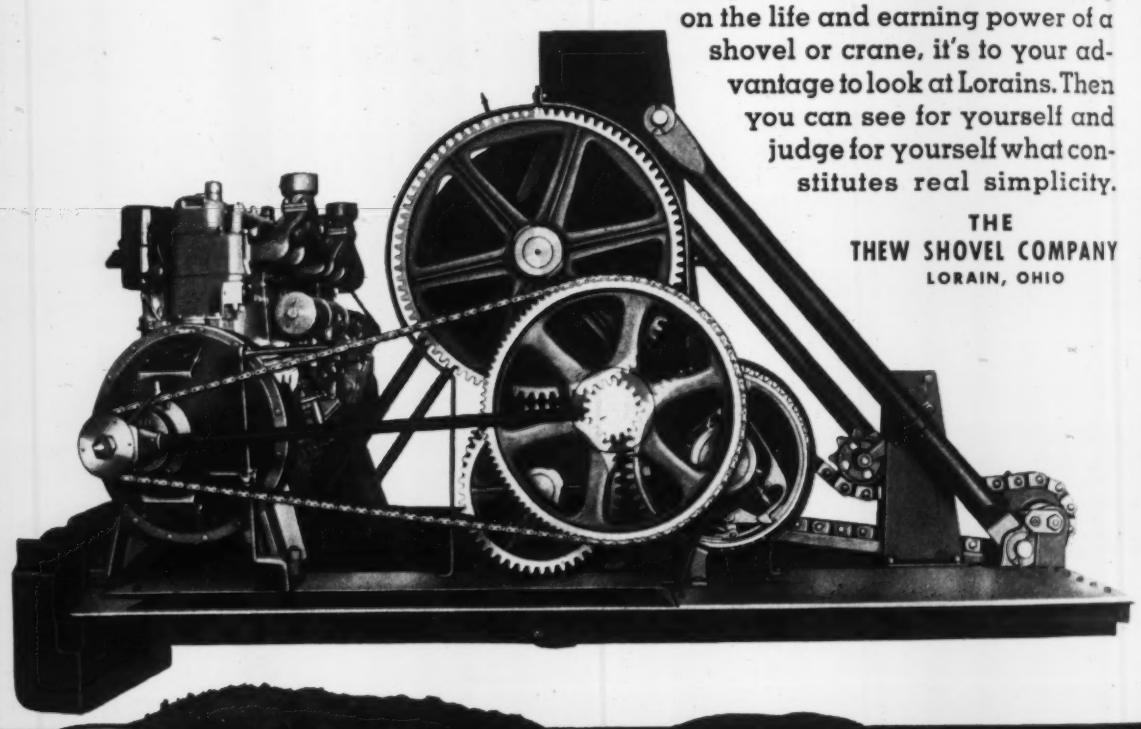
architecture characterizes Lansing's new million-dollar softening plant. *See p. 3*

YOU CAN SEE ITS SIMPLICITY

YOU don't have to accept Lorain simplicity on anyone's say so. Just look at this turntable. Note the use of fewer and strong parts—trace the direct flow of power—check the accessibility of the entire assembly. Then compare it point-for-point with *any* shovel or crane turntable on the market today. Your eyes will give you the answer to the true simplicity of Lorain's basic Center Drive design.

But don't stop there. Step up into the cab of a Lorain. Find out for yourself how "alive" it is—how easily and quickly the clutches respond—how power concentrates just where you want it.

If you feel, as do most contractors, that simplicity of design has an important bearing on the life and earning power of a shovel or crane, it's to your advantage to look at Lorains. Then you can see for yourself and judge for yourself what constitutes real simplicity.



THE
THEW SHOVEL COMPANY
LORAIN, OHIO

3/8 to 2 1/2 YD.
LORAINS

THEW CENTER DRIVE
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ENGINEERING NEWS-RECORD

NEWS

Volume 124 MARCH 7, 1940 Number 10

NOTES ON THE NEWS

Quick Surveys of Construction Events

▶ Residents of the lower Sacramento Valley in California look forward more than ever to the completion of Shasta Dam as another disastrous flood overflows the lowlands. Preliminary estimates indicate it is the greatest flood on record. Total damages may reach $10,000,000. No permanent construction at Shasta Dam was far enough along to be subjected to flood but the contractors suffered substantial losses to equipment and temporary works.

▶ Nearly five hundred were in attendance at the 36th convention of the American Concrete Institute last week in Chicago. Special attention was given to mix proportioning, research and vibration. Durability and rain tightness were other prominent program items. R. B. Young of Toronto is the new president.

▶ Officials of the Pennsylvania Turnpike Commission are seeking state legislative approval for extension of the Pittsburgh-Harrisburgh toll superhighway to Philadelphia; a $50,000,000 bond issue would finance the work if approved.

▶ A stream pollution bill that would make any new pollution of navigable waters illegal has been passed by the House. The bill provides for a division of control in the U. S. Public Health Service.

▶ The High Point, N. C., court battle over the proposed $6,500,000 hydroelectric project on the Yadkin River continues, oral arguments having been heard Feb. 29 and March 1 in the North Carolina State Supreme Court. Involved are the city, the Duke Power Co. and Yadkin County.

▶ Tolls cannot be collected on Westchester County's Hutchinson River Parkway, New York's highest state court rules.

CALIFORNIA FLOODS PROVIDE PICTURE OF THE WEEK

As if to remind construction workers at Shasta Dam that the structure they are building across the Sacramento River has a real purpose to fulfill, spring floods descended on northern California in full force last week. Levees were breached as shown in the above view but flooding of bypasses saved a great many breaks in the main levee system.

The Sacramento River rode roughshod over contractors' plant at Shasta in setting new record stages at several points. The Russian River farther north also exceeded 1937 peaks. In Berkeley mud and debris were piled against business buildings and residences when some 2 in. of rain fell in about an hour.

Total damage has not yet been determined but is expected to reach $10,000,000.

More on California floods on p. 3.

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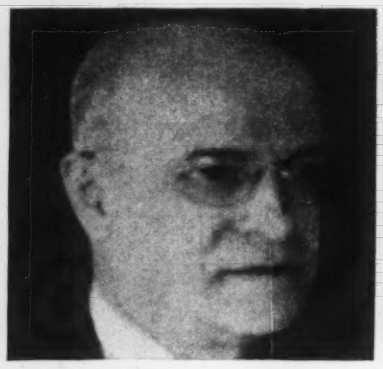
HONORED FOR INVENTIONS THAT MADE ENGINEERING JOBS



Charles F. Wallace

Willis H. Carrier

OF THE RECIPIENTS of the 19 silver plaque national pioneer awards, made by the National Association of Manufacturers to "inventors and research workers who have made outstanding contributions to progress through pioneering achievements on the American frontiers of industry," three are closely associated with the field of civil engineering. These are John V. N. Dorr, whose award for contributions to sewage treatment was announced last week, Willis H. Carrier and Charles F. Wallace. Carrier of the Carrier Corp., Syracuse, N. Y., is well known for his pioneering in the science of air conditioning of buildings and Wallace of Wallace & Tiernan Co., Inc., Newark, N. J., is equally famous for his work in the purification of water by chlorine treatment.

Among the larger group of 500 honored at regional meetings and awarded scrolls attesting to pioneer achievement were also a number that the civil engineering and construction industry is proud to claim. Leon S. Moisseiff, consulting engineer of New York, was honored as a "suspension bridge expert who has been engaged upon problems of construction of most of America's great bridges." Harry H. Barber, Barber-Greene Co., Aurora, Ill., was recognized for his inventions of machines for materials handling, ditch digging and road paving. Other recipients included Gano Dunn, J. G. White Engineering Co., New York; C. J. Holslag, Arc Cutting & Welding Co., Newark, N. J.; Lester Kirschbraun, The Flintkote Co., New York; Max Spillmann, Worthington Pump & Machinery Corp., Harrison, N. J.; J. E. Myer, Timber Engineering Co., Washington, D.C.; H. F. Hagen, B. F. Sturtevant Co., Boston; A. L. Loepsinger, Grinnell Co., Providence; A. C. Fischer, Servicised Products Corp., Chicago; C. K. Roos, U. S. Gypsum Co., Chicago; H. W. Greider, The Philip Carey Mfg. Co., Lockland, Ohio; Games Slayter, Owens-Corning Fiberglass Corp., Newark, Ohio; Joseph Becker, Koppers Co., Pittsburgh; T. V. Buckwalter, Timken Roller Bearing Co., Canton, Ohio; J. F. Joy, Joy Mfg., Franklin, Pa.; J. F. and J. C. Lincoln, Lincoln Electric Co., Cleveland; A. A. Criqui, Buffalo Forge Co.; A. H. Onstad, Weyerhaeuser Timber Co., Tacoma, Wash.; W. P. Bentley, Uvalde Construction Co., Dallas; W. H. Mason, Masonite Corp., Laurel, Miss.; W. D. Moore, American Cast Iron Pipe Co., Wallace L. Caldwell, Aerocrete Western Corp., and Erskine Ramsey, Alabama By-Products Corp., all of Birmingham; and F. D. Wilson, Western-Austin Co., Aurora, Ill.

Stream Pollution Bill Passed by House

A stream pollution bill which would make illegal any new pollution of navigable waters was passed by the House last week and sent to conference with the Senate. The bill would set up in the U. S. Public Health Service a division of water pollution control which would be directed to make studies of pollution abatement methods and give technical aid to the states. An annual appropriation of $250,000 is authorized for this purpose.

As passed last year by the Senate, the bill would have authorized loans to private and public bodies and 33⅓ per cent grants to public bodies. It was amended in the House committee, however, to eliminate these provisions and substitute RFC loans to public bodies, subject to approval of the new division.

When the bill reached the floor of the House, Representative Karl Mundt, sponsor of a very drastic anti-pollution measure, succeeded in inserting the section forbidding new pollution. Under Mundt's amendment any new pollution, unless approved by the division of pollution control, is declared to be a public nuisance and to be subject to injunction proceedings by the U. S. Attorney General.

• • •

Officials Seek to Extend Pennsylvania Turnpike

Officials of the Pennsylvania Turnpike Commission have announced that if a special session of the Pennsylvania state legislature is called they will seek to have enabling laws passed providing for the extension of the superhighway being built from Pittsburgh to Harrisburg. A $50,000,000 bond issue is being planned for extension of the road to Philadelphia if the move receives legislative approval.

• • •

Cave-In at Shenandoah, Pa. Causes $1,000,000 Damage

Damage at Shenandoah, Pa., was estimated at over $1,000,000 as about 16 city blocks were affected March 4 by a cave-in over anthracite mine workings. Settling varied from a few inches to as much as 5 ft. and on March 8 was continuing at several places.

The water supply for a section of the city was cut off for 14 hours because of a break in one of the mains leading from the storage reservoir.

Further details of the subsidence will be given in next week's issue.

Sacramento River Experiences Its Greatest Flood

Northern California storm brings 8 in. of precipitation in 24 hr., resulting in new record stages; damage may total $10,000,000

In the last few days of February, a general storm in northern California, coming after long continued rains, flooded streams throughout the northern part of the state. Precipitation of 8 in. or more in 24 hr. was reported at several points. Floods were worst along the Sacramento River and its tributaries, although the Russian River also overflowed and caused extensive damage with water levels near the mouth 33 in. higher than the 1937 flood peak. Total damage may reach $10,000,000.

By-pass levees break

Sacramento River flood gates were opened early admitting water to by-pass channels, thus sacrificing crops in the by-passes but lessening risk to important river levees. Several by-pass levees broke, notably in the Sutter by-pass, flooding Reclamation Districts 70 and 1660. The overflow over the long Freemont Weir was 6 ft. deep. From Marysville to Red Bluff, more than 100 mi., overflows and levee breaks were so frequent that lowlands made one great lake ranging in places up to 15 mi. wide.

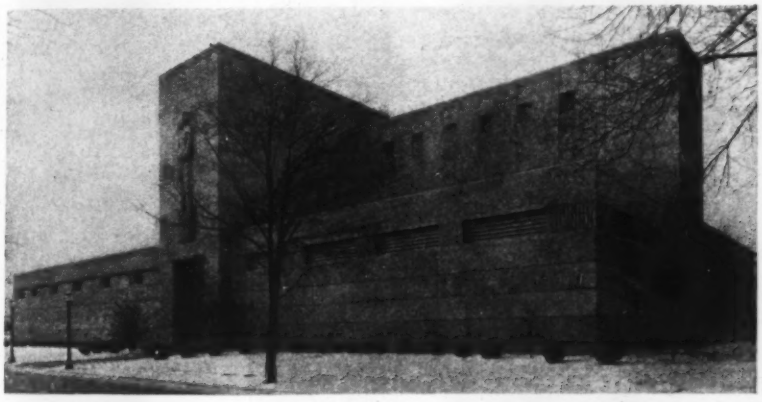
At Kennett in the Sacramento River canyon, the flood reached a height at least 3 ft. above any previous record. Flow quantities have not been calculated, but it seems likely that they will exceed the previous record (Dec. 11, 1937) of 132,000 sec.-ft.

Had Shasta Dam been completed, the destructive peak of this flood could have been checked. At Redding, center of Shasta activities, the seasonal rainfall of more than 42 in. is in sharp contrast with the normal of 26.64. This city, like many others, was for a time isolated, with railroad and highway routes impassable. At Shasta Dam itself, Pacific Constructors lost their bridge that spanned the river above the dam and also two girders on one end of their larger bridge just below the dam site. The Columbia Construction Co. lost the superstructure of the bridge built for the belt conveyor across the Sacramento River at Coram: the conveyor bridge at Redding was not damaged nor were other parts of the belt conveyor line. Water was two to six feet deep over the gravel deposit at Redding with considerable under cutting of pit conveyors, crusher and other equipment.

The long steel bridge across the Sacramento River at Redding (known as "first crossing") built for the relocated Southern Pacific, suffered damage south of the old river channel where the four legs of a steel tower were undercut, causing the deck to settle 18 in. and to move 12 in. out of line.

Many drainage districts had to stop pumping when pump motors were drowned out and for the same reason some small cities issued drinking water conservation instructions because the only water supply available was that in reservoirs.

THEIR dam was flooded out. Ralph Lowry, construction engineer and Walker R. Young, supervising engineer at Shasta.



MONOLITHIC CONCRETE BUILDING FOR LANSING'S SOFTENING PLANT

BELIEVED by its designers to be one of the country's most complicated pieces of WPA construction, Lansing, Michigan's new million-dollar water softening plant is an attractive structure in monolithic concrete. The job involved, in addition to complicated concrete work, the installation of such equipment as vacuum conveyors, flocculators, clarifier equipment and chemical feeding equipment.

Plant capacity is 20 mgd. Water treated is high in iron, with a hardness of about 400 ppm, which the new plant reduces to 85 ppm. Due to limitations of the site, mixing and coagulation processes are placed in 2-story basins.

The plant was constructed for the Board of Water and Electric Light Commissioners, Lansing, of which Otto E. Eckert is general manager. Immediate responsibility for design was in charge of Claud R. Erickson of Lansing. Alvord, Burdick & Howson of Chicago were engineering consultants, and Lee Black and Kenneth C. Black of Lansing were architectural consultants.

• • •

North Dakota Ruling Provides Large Road Fund

The North Dakota State Supreme Court has ruled that the one cent additional gasoline tax is constitutional. As a result, $396,000 of state funds has been released permitting $2,462,000 of road construction with federal aid. Additional construction without such aid brings the total construction program for North Dakota to $4,071,000. This includes improvement of 176 mi. of roads and five grade separation projects. It was erroneously stated in the February 8 issue that the ruling had been handed down in Nebraska.

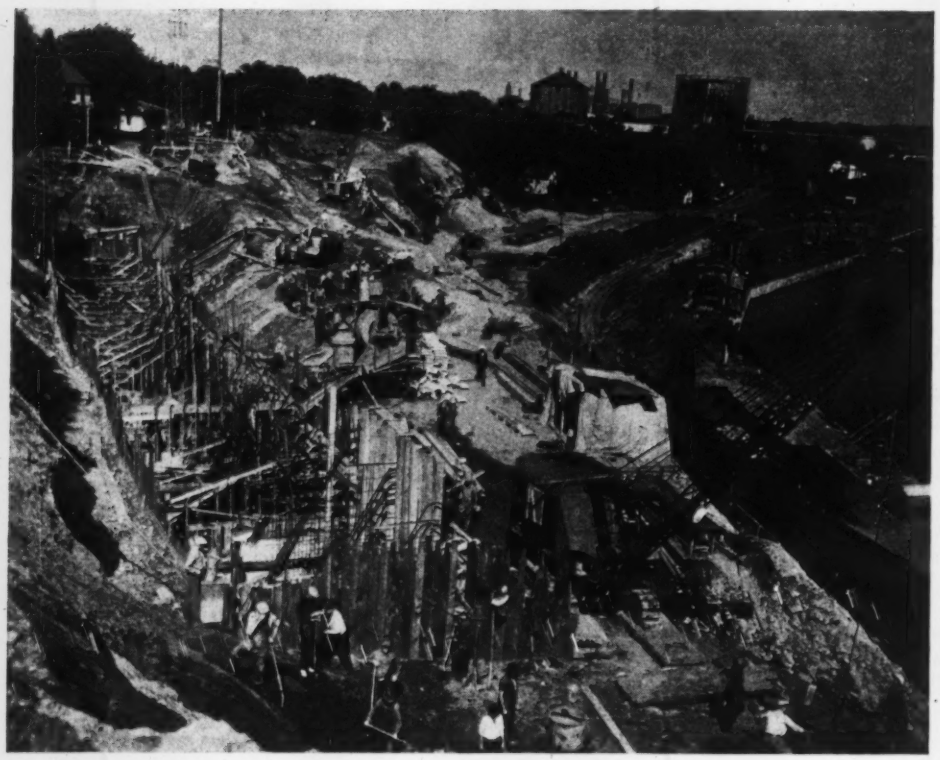
Minneapolis Improves Its Mississippi F

A LOAD-BEARING MASONRY WALL constructed along the outcrop of the bedrock to protect from further erosion the sandstone underlying the limestone. The wall varies from 6 to 20 ft. in height.

MINNEAPOLIS through its Board of Park Commissioners, is transforming 1½ miles of the west bank of the Mississippi River into a new link in its park system. The area is composed of river flats averaging 50 ft. in width at the base of the steep slopes which make up the gorge of the river, the slopes varying in height from 90 to 110 ft. above river elevation.

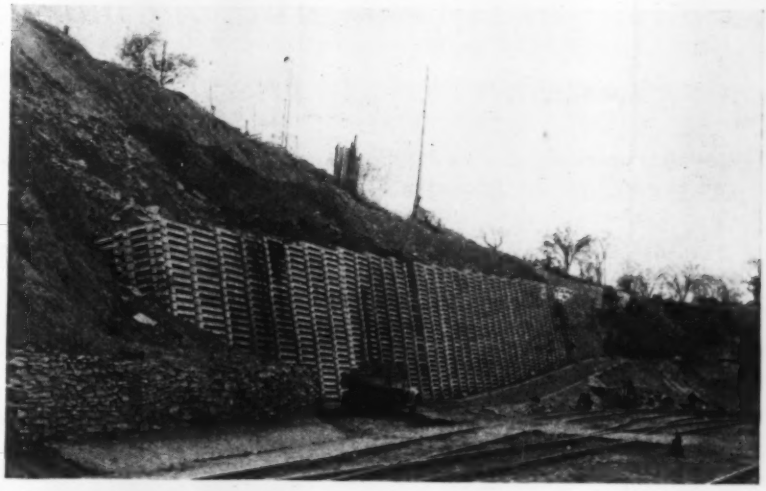
Construction consists mainly in building a series of fourteen land and river retaining walls, filling behind the land walls, adding material behind the river walls and providing a 40-ft. driveway and two 6-ft. sidewalks.

The first plan for a parkway through this area was prepared in 1913 by Theodore Wirth, now superintendent emeritus of Minneapolis parks. In 1936 the preparation of a survey and plat of the proposed improvement was authorized by the Park Commission, A. E. Berthe, park engineer, and his staff being directed to do the work. He also supervised construction, with preliminary work starting in 1937. The undertaking is a WPA project.

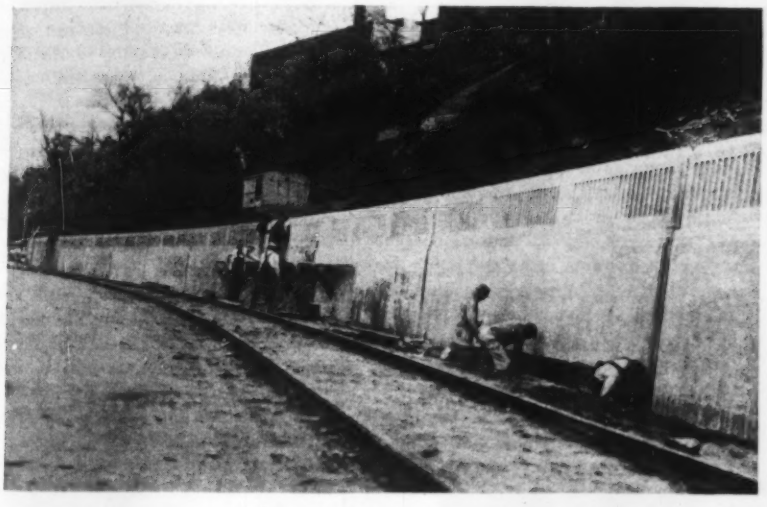


DESIGNED to withstand an earth load 45 ft. high, a counterfort wall is being built with three 10-ft. counterfort spacings per panel, each 30-ft. section to be separated from its neighbor by a 1-in. expansion joint. The wall will vary from 25 to 32 ft. in height and will be 810 ft. long.

Parkway System



THIS DOWNHILL WALL of concrete crib units, 32 ft. high at one point, is said to be one of the highest walls of its type in this country. It is supported on a stepped concrete base laid in the talus slope below the level of the limestone horizon.



WORKMEN are shown adding the finishing touches to a land wall of unusually pleasing architectural effect. Note the expansion joints, which are spaced every 30 ft.

ERECTING FORMS for construction of the land wall shown in the view immediately above. The wall was built on a gravel fill placed by the U. S. Engineers in dredging for a barge turning basin in the Mississippi River.

Placing and Weathering of Concrete Lead in A.C.I. Discussions

Mix proportioning and vibration share interest with durability and research on test properties at Chicago convention

Extensive work for the improvement of concrete by way of better mixing and placing and by study of properties and durability was reported to the 36th convention of the American Concrete Institute at Chicago last week. The attendance approached 500. In addition to concrete properties and manipulation an important construction question was brought up in a suggestive paper on tolerances in concrete building construction.

Ready-mixed concrete

In the field of mixing and placing, several new methods for designing mixes were proposed and results of comparative tests on tamped and vibrated concrete were presented. Ready-mixed concrete also received attention, in reviews of progress and service advantages by leading operators in this field. Durability was represented by a summary of experience in frost resistance, experiments on rain penetration of walls, and a report on the resistance of silo staves. New researches included impact tests of beams and measurement of cracking tendency of concrete. Various uncompleted items of laboratory work were discussed in a committee session on research.

Specification drafts considered by the meeting included revision of the Institute's building code, recommended practice in measuring, mixing and placing concrete, and specifications and test methods for concrete silo staves. Action to adopt these was deferred pending further study.

Roderick B. Young (Hydro-Electric Power Commission of Ontario, Toronto) was elected president for the coming year; vice-presidents are Admiral B. Moreell (Bur. of Yards and Docks, Washington) and Prof. R. E. Davis (Univ. of California). Retiring President F. E. Richart (Univ. of Illinois) presented Wason medals for the best papers of the past year to T. C. Powers (Portland Cement Assn., Chicago) for a paper on bleeding of concrete, and to H. J. Gilkey, S. J. Chamberlin and R. W. Beal (Iowa State College, Ames), for a paper on bond.

Mix design methods

Three new methods for designing concrete mixes were proposed. One was developed by C. T. Kennedy (Cincinnati), based on the view that the thickness of cement paste film on the aggregate particles measures the consistency of the concrete. Curves connecting this thickness with slump require as additional datum the selection of water-cement ratio by the unit designer. Another method, proposed by H. L. Kennedy (Dewey & Almy Chemical Co., Cambridge, Mass.), begins with determination of best fineness modulus, preferably with the aid of trial mixes.

A third method, set forth in detail by Prof. W. M. Dunagan (Iowa State College, Ames), recommended use of the Weymouth views on particle interference coupled with the rule that "the workability of concrete mixes using a given aggregate will remain constant over a practical range of cement content if both the water and the coarse aggregate per unit volume of concrete are held constant." An interesting feature of Prof. Dunagan's method was an inclined belt machine to separate flat from round particles of aggregate for preparation of test mixes.

Workability primary factor

While all three methods adopted workability as primary factor in mix determination, discussion by the meeting brought out the opinion that they are not adaptable to many cases of local aggregates, to pavement concrete and "ordinary concrete." F. H. Jackson (Public Roads Administration, Washington), stated that most rules for mix design are confusing and useless to the man on the job, and that methods should be found that will give some help to ordinary concrete. F. M. Russell (Bureau of Reclamation, Denver), brought out that it is not necessary to have an excess of paste or mortar over the aggregate voids, as assumed in some of the mix design methods, as some mass concrete of excellent quality does not even have the measured voids filled. Use of the particle interference principle also may produce concrete of poor texture because of an excess of pea gravel.

In pavement concrete flexure and tensile strength are important, and there must be good bond of the paste with the concrete, often dependent on texture and porosity of the aggregate. W. F. Kellermann and F. H. Jackson (PRA, Washington) stated that a small number of trial mixes will yield curves connecting water ratio, flexural strength and sand percentage for a workable mix, and these curves can then be applied to specification values. Field adjustment of mix is necessary in all cases, according to L. W. Walter (Jersey City).

Valuable addition to information on concrete mixes was made by a paper on properties that affect concrete mix design, with full presentation of test curves from the practice of the Reclamation Bureau, by R. F. Blanks, E. N. Vidal, W. H. Price, and F. M. Russell, of the Bureau's engineering staff. The paper was prepared to supply data as a basis for developing recommended practice in design of concrete mixes by a committee on this subject.

Durability and rain-tightness

Summarizing extensive experience with concrete exposed to frost action, R. B. Young (Toronto) outlined the faults that induce deterioration and suggested suitable remedies. "The requirements for frost-resistant concrete" he said, "are only those already accepted as necessary for quality concrete. However, experience has indicated that more than average care should be taken to have it impermeable and of low porosity and absorption, especially in those places where the structure may be wet for considerable periods of time." An abstract of Young's paper and some others will be given in next week's issue.

Rain penetration of walls was studied by R. E. Copeland and C. C. Carlson (P.C.A., Chicago), by tests of wallettes built of brick, concrete block and monolithic concrete with different workmanship, finish and mortar, exposed to 24-hr. spray representing 2½-in. rainfall under a 25-mi. wind. The best walls (see A.C.I. Journal, November, 1939) developed no leaks or backface dampness; these included brick walls laid up in high-grade mortar with excellent workmanship, monolithic walls, and block walls faced with three-coat stucco or an unbroken paint coating.

Cracking of concrete depends on shrinkage, restraint, strength and extensibility, according to Prof. R. W. Carlson (M.I.T.). To measure the cracking tendency of different concretes he cast 4 x 4-in. specimens 36 in. long around a 1-in. steel rod with threaded ends, wrapped with fabric in its middle part, and measured the change in length of the steel rod as shrinkage progressed. He found that different aggregates differ in time required for the specimen to crack, that lean concrete, large aggregate, and some air content reduce cracking, and that longer moist curing is favorable.

How vibration affects concrete, as

compared with tamping or rodding, was studied in two investigations. Prof. George W. Washa (Univ. of Wisconsin) measured the properties of a large number of hand-rodded and vibrated specimens differing in cement and mix. Among the important findings was that internal vibration made it possible to place no-slump concrete as lean as 1:6:12, that for a given water-cement ratio the vibrated specimens were stronger than the rodded ones, and that in most cases they were also less permeable.

Vibration of concrete blocks compared with tamping was reported on by Prof. K. F. Wendt (Univ. of Wisconsin) and Paul Woodworth (P.C.A., Chicago) from an extensive series of tests with different natural and lightweight aggregates and different richness. The vibrated units showed higher early strength and absorbed less water than the tamped units. For adequate resistance to freezing and thawing, present specifications calling for 700 lb. per sq. in. gross compressive strength at 28 days and maximum absorption of 15 to 16 lb. per cu. ft. are inadequate, but a strength of 1000 lb. will insure reasonably satisfactory behavior under severe pressure.

Beams under impact

Tests of concrete beams under impact by falling weight were reported by Prof. T. D. Mylrea (Univ. of Delaware). One objective of the tests was to find whether high-yield-point reinforcement produces low impact resistance. The tests showed that beams of low and of high yield-point reinforcement behaved alike. Prof. J. R. Shank (Ohio State University) supplemented the author's results with the statement that in the gas explosion in the Ohio State office building some years ago none of the reinforcing steel broke off short.

John R. Nichols (Boston) proposed a list of tolerances in concrete building construction, as a basis for the establishment of a standard of practice after discussion. For variation from vertical in surfaces and arrises of columns, piers and walls he proposed a maximum of ½ in. in any story, or 1 in. in any 50 ft. or more, while conspicuous lines such as those of corner columns should be limited to half this variation. A fuller quotation of his proposed tolerances will appear in next week's issue.

Ready-mixed concrete practice was discussed by H. F. Thomson (General Material Co., St. Louis) and by Alexander Foster, Jr., H. J. Knopel and H. J. Whitten (Warner Co., Philadelphia). The two papers brought out the leading improvements made in ready-mix practice and its important influence in pioneering better control, making high-grade concrete available for small-size operations, and eliminating many causes of inconvenience, delay, and reduced quality with advantage alike to designer and contractor.

Discussion referred especially to the reduction in slump during the time of transport of the concrete. Test data on recession in slump are used to govern suitable addition of water at the ready-mix plant. Question from the floor as to the desirability of adding this make-up water at the point of delivery was answered by strong expressions of opinion that such procedure would destroy the assurance of control of quality now obtained.

WASHINGTON HIGHLIGHTS

Special reports by Paul Wooton

CONGRESSIONAL ACTION was completed last week on a measure making the Bonneville Administration an agency of the Department of the Interior and authorizing the Secretary of the Interior to appoint an assistant administrator, a chief engineer, and a general counsel at $7,500 per year each. The bill also extends until 1942 the period in which public bodies and cooperatives shall have priority in the purchase of power. The bill was passed by both houses last year in varying form and has been in conference since. Previously, although the Secretary of the Interior appointed the Bonneville Administrator, he did not have the immediate control over his activities possible under the terms of the Oresent bill.

EVIDENCE that at least one AFL building trades union may be feeling the effect of CIO organizing efforts in the field is seen in the recent action of the painters union in amending its constitution to impose an extra twenty cents per member per month assessment on its locals for the announced purpose of fighting the CIO activities and the anti-trust investigations of the building industry. Similar action on a broader scale, it is thought, may emerge from the building trades department conference now under way in Washington.

RECORD SPAN GIRDERS PROPOSED FOR HARTFORD BRIDGE

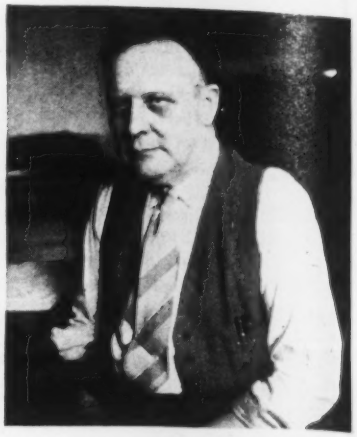
IN ORDER to bring the cost of the proposed new bridge over the Connecticut River at Hartford and its approaches within the allowable cost of $4,250,000, the Connecticut State Highway Department is studying the plate girder type of bridge. The above photograph shows one of the preliminary designs consisting of a 5-span continuous structure with each span 280 ft. in length. Additional studies are being made of a 3-span continuous crossing.

Surveys of the site are now being carried out by the highway department. Borings will be started soon.

Des Moines Tribune Photo

John MacVicar, now completing his third two-year term as Des Moines, Ia., streets commissioner, looks mighty capable, and he is, for the Des Moines Community Service has named MacVicar as the city's most outstanding citizen during 1939. From 1924 until 1932, when he was first elected streets commissioner, MacVicar headed his own construction firm in Des Moines, the Municipal Engineering Co.

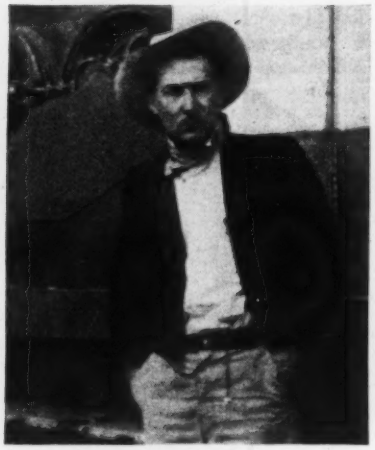
John E. Wiley, employed for the past 12 years by the Wyoming State Highway Department, March 1 began duties as full-time secretary-engineer for the Associated General Contractors of Wyoming. When Wiley was with the highway department he served as project engineer, traffic engineer, assistant engineer of plans and manager of the highway planning survey. His new office will be at Cheyenne.



The Ohio River Pollution Survey is a major assignment for **J. K. Hoskins,** senior sanitary engineer of the U. S. Public Health Service in charge of the stream pollution investigation station at Cincinnati. Hoskins is known as the "dynamo" of an organization whose research contributions in sewage treatment and stream purification form the basis of much of today's sanitary engineering practice.

MEN AT WORK

Tough contracting jobs are not new to **A. S. Fry,** surviving member of Fry and Kain, old time contractors of Lansing, Mich. Fry is shown in front of a bulldozer at work backfilling a trench in which has been placed a 46-in. reinforced concrete pipe, part of the 30-mile line being built at a cost of $2,500,000 to bring Lake Michigan water to Grand Rapids. Fry buys new equipment for every big job.



Superintending a big job at the University of Arizona for the Pima County Highway Department, **Lee O. Nutt** looks right at home. For the past 20 years he has been feeling that way, a total of 12 years having been spent with the New Mexico State Highway Department and several years as construction superintendent for the Steel-Graham Co. of Tucson and the Lee-More Construction Co. of Globe, Ariz.

Proud of nearly 43 years with the Indianapolis, Ind., Water Co., **Clemens Blank,** now construction superintendent, looks back to the time when he had duties equal to those of an errand boy. He became construction superintendent in 1913 to assume complete charge of all pipeline work. Since then, 342 mi. of mains have been built under his supervision, the people served having increased from 31,000 to 79,000.

MEN AND JOBS

A. FREDERICK REDUP of Van Wert, Ohio, has been appointed resident deputy director with the Ohio State Highway Department to have supervision over Van Wert, Paulding and Defiance counties. The appointment has caused a shift of M. O. ENTERLINE of Paulding County to a similar position for Putnam, Allen and Hardin counties. Emerson Burrell has been placed in charge of Hancock and Wyandot counties.

LYLE HARRISON, former assistant city engineer of Greenwood, Miss., has been appointed maintenance engineer for a six-county district with headquarters at Grenada for the Mississippi State Highway Department.

ROLLAND R. GUST of Diamond Springs, Calif., has been named supervisor of construction for El Dorado County, Calif., to succeed the late CHARLES GREEN.

BLAIR RICHARDSON has been elected chairman of the metropolitan water board of Salt Lake City to succeed HERBERT S. AUERBACH, who has served as chairman since the board was organized in 1935. S. A. KENNEDY has been named vice chairman to succeed Richardson, and GEORGE W. SNYDER has been re-elected secretary.

T. W. MADDUX has been appointed county engineer of Lincoln County, Miss. Maddux's first duties will be to prepare specifications for a $324,000 road project.

L. E. CARPENTER has been appointed superintendent of the city water and light plant at Kosciusko, Miss., to succeed the late HENRY C. MILLER.

SUMNER C. WILLIS, for 17 years superintendent of construction for the United Engineers & Constructors, Inc. of Philadelphia, is now connected with the H. K. Ferguson Co., industrial engineers and builders with offices in Cleveland and New York.

L. W. MAHONE, engineering extension service, Iowa State College, is conducting a weekly surveying class at Des Moines, Ia. for a group of 23 men with various engineering positions. The class was organized January 10 and will continue for about 12 weeks.

ARTHUR W. BUSHELL, for the past eight years engineer of contracts and construction for the Connecticut State Highway Department, has been appointed director of the newly-formed division of engineering and construction. Bushell, a graduate of Brown University of the class of 1907, has been connected with the department for 27 years, having been appointed engineer of construction in 1913. He has served as division engineer at Norwich and New Haven.

A. K. MALLARD, district engineer for the North Carolina State Highway and Public Works Commission at Whiteville, has been transferred to the Wilmington district to succeed the late R. A. BURNETT. At Whiteville Mallard has been succeeded by C. R. ROBERTS of Burgaw, for the past 18 months supervisor of WPA farm and market road construction in Pender County.

J. W. GREEN, former senior bridge engineer with the California Division of Highways, is now acting as southern representative of the bridge department in charge of the Los Angeles office. Green is a graduate of Oregon State College, class of 1916. He served as assistant bridge engineer with the Washington State Highway Department for 8 years, leaving there in 1930 to go with the Bureau of Public Roads. He also worked on the San Francisco-Oakland Bay bridge as assistant engineer of design to be in charge of preparation of contract plans for substructure and approaches.

ARTHUR A. SCOTT, until recently with the WPA as engineer in charge of construction of various water and sewage projects, has opened offices at Greensboro, N. C. to do land surveying and general civil engineering work. Before going with the WPA, Scott worked for a time with the bridge engineering division of the North Carolina State Highway and Public Works Commission and for a period with the city engineering department of Greensboro. He graduated from North Carolina State College in 1926.

I. L. JOHNSON, formerly assistant district manager of the Raymond Concrete Pile Co., Los Angeles, has resigned to become staff engineer with DONALD R. WARREN, consulting structural and civil engineer of Los Angeles. Prior to his connection with the Raymond Concrete Pile, Johnson, a graduate of Stanford University, was with the bridge design department of the state of California.

LIEUT. COL. P. S. REINECKE, who has been in charge of the St. Louis district office, U. S. Engineers, for the last four and one-half years, has been advanced to the rank of colonel. Col. Reinecke, a graduate of West Point with the 1907 class, has been on various tours of duty with the army engineers, including four years with the Mississippi River commission prior to being placed in charge of the St. Louis district office.

FRANKLIN THOMAS, vice chairman of the board of directors of the Metropolitan Water District of Southern California, has been named to receive the Arthur Noble award for 1939. The award is given each year to the citizen of Pasadena rendering the most notable service to the city in promoting the general welfare of the community. Thomas has been a member of the faculty of the California Institute of Technology since 1913 and for many years head of the civil engineering department.

LLOYD T. MCAFEE, long with the city and county of San Francisco, has been appointed manager and chief engineer of the Hetch Hetchy water supply, power and utilities engineering bureau. His last position was that of utilities engineer.

L. EUGENE EASLEY, who has been employed by the School City of Logansport, Ind. to supervise the construction of four new school buildings under a PWA program, is now superintendent of buildings and grounds for the school system. Easley was formerly connected with the construction department of Montgomery Ward & Co.

RUSSELL PARSONS, former Idaho state highway engineer, has been appointed director of operations for the WPA for the North Idaho District No. 2 with headquarters at Coeur d'Alene to succeed E. V. CYR, who has been transferred to active supervisor of a road project.

PHILLIP T. SAMUEL, senior administrative engineer in the plant and equipment section, office of the chief of engineers, Washington, D. C., has been transferred to Philadelphia as chief of the newly organized marine division in the U. S. Engineer Office at that city.

RALPH W. COOPER, JR., senior engineer, city engineering department of Jacksonville, Fla., is now acting as chief engineer on construction of the new national guard training area near Starke in Clay County, Fla. He is employed by the state quartermaster of the military department of the state of Florida in his new work. Cooper joined the engineering department of the city of Jacksonville in 1924, leaving there in 1925 to work two years on rail-

road location and construction, topographical mapping and land surveying. He returned to the city department in 1927.

MAJ. C. W. BURLIN, who has been district engineer since April 1938 at Philadelphia of the U. S. Engineer office, is now doing duty with the Ohio national guard to be stationed at Cleveland. From 1935 to 1938 Burlin served as executive officer for the Philadelphia district.

CHARLES E. TRIMMER of Madison, S. D. and former South Dakota state engineer, has been appointed district supervisor of the drainage and irrigation census in the Dakotas.

R. E. GIBSON, graduate of the University of Nebraska, has been named city planning engineer for Omaha, Nebr.

JOHN MORS, formerly area engineer for the WPA at Fort Dodge, Ia., is now serving as engineer for Webster county, Ia., having succeeded C. A. Snook.

HERBERT F. WICKENKAMP of Sigourney, Ia., was recently appointed engineer of Audubon County, Ia., to succeed T. L. NOOE, who held the position during the past four years.

HARVEY WILKE, who last month completed his work for master's degree in civil engineering at the University of Missouri, has been employed by the city of Columbia, Mo. to supervise the city's new sewage disposal plant.

MEETINGS

AMERICAN RAILWAY ENGINEERING ASSOCIATION, Chicago, March 12-14.

REGIONAL AND LOCAL

NEW YORK STATE SOCIETY OF PROFESSIONAL ENGINEERS, mid-winter meeting, Albany, N. Y., Mar. 8-9.

AMERICAN WATER WORKS ASSOCIATION, Southeastern Section, annual convention, Birmingham, Ala. Mar. 18-20.

NEW JERSEY SEWAGE WORKS ASSOCIATION, silver anniversary convention, Trenton, N. J., Mar. 20-22.

SOCIETY OF AUTOMOTIVE ENGINEERS, Metropolitan Section, Symposium on "Rebuilding Our Cities for Traffic Safety and Efficiency," Hotel New Yorker, New York City, March 21.

NEW JERSEY MOSQUITO EXTERMINATION ASSOCIATION, annual meeting, Hotel Haddon Hall, Atlantic City, March 20-22.

AMERICAN WATER WORKS ASSOCIATION, Canadian section, annual convention, March 27-29, London, Ont.

NEW YORK STATE Association of Highway Engineers, annual convention, Rochester, N. Y., March 28-30.

MICHIGAN ENGINEERING SOCIETY, annual convention, Cranbrook, Mich., Mar. 28-30.

AMERICAN WATER WORKS ASSOCIATION, Montana Section, annual convention, Miles City, Apr. 2–6.

ELECTIONS AND ACTIVITIES

FRANK L. CARSWELL of Kansas City, Mo., has been elected president of the Associated General Contractors of Missouri. Other new officers are: Fred W. Garrett, Springfield, Mo., vice-president, and J. M. Joyce, Keokuk, Iowa, treasurer. E. C. L. Wagner of Jefferson City, Mo., is manager.

FRANK L. CARSWELL

THE GENERAL CONTRACTORS section of Montreal Builders Exchange has re-elected C. H. Gordon of Atlas Construction Co. as chairman.

THE ASSOCIATION of Professional Engineers of Manitoba has elected F. S. Adamson as president and E. M. M. Hill as vice-president.

THE IDAHO SOCIETY OF ENGINEERS has elected W. C. Havenor of Pocatello as president.

Z. E. SEVISON, chief engineer of the North Dakota State Highway Department, addressed the North Dakota County Commissioners at their recent convention at Dickinson. Sevison outlined the state highway building program for 1941, which is expected to bring North Dakota's hard surfaced mileage up to 3400 mi.

WHEN the Michigan Association of Road Commissioners and Engineers met for its annual meeting in Ann Arbor, Mich., Feb. 17, Leon Luke, of Mt. Clemens and engineer for the Macomb County Road Commission, was elected president; Lee O. Brooks, of Milford and Chairman of the Oakland County Road Commission, vice-president, and Louis F. Levin, engineer for the Chippewa County Road Commission, secretary-treasurer.

PAUL G. MARTIN, engineer of design with the Kansas State Highway Department, has been elected president of the Kansas Engineering Society and Fred W. Epps, maintenance bridge engineer with the department, president of the Kansas chapter of the American Society of Civil Engineers, the two organizations meeting late last month at Wichita. Rollin Smith of Kansas City, Kan., was elected vice-president of the first group and George Epps of Topeka secretary. For the Kansas chapter of Am. Soc. C. E., Murray A. Wilson, Salina, was elected vice-president, and George W. Lamb of Topeka re-elected secretary.

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Short Courses

MISSOURI WATERWORKS OPERATORS' SHORT COURSE, University of Missouri and the Missouri State Board of Health, Columbia, Mo., Mar. 21–23.

HIGHWAY: Sponsored by Texas A. & M. College and Texas highway department, College Station, Tex., Apr. 9–11.

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Engineering Conferences

KANSAS HIGHWAY ENGINEERING: Sponsored by Kansas Highway Commission, Kansas County Engineers Association, and Kansas State College, Manhattan, Kan., Mar 14–15.

TENNESSEE INDUSTRIAL PERSONNEL CONFERENCE, University of Tennessee, Hotel Peabody, Memphis, March 21-22.

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Engineering Schools

HULL CONSTRUCTION and HULL DESIGN, Federation Technical School, New York, 16 weekly sessions starting March 5.

MUNICIPAL TRAINING school for superintendents of sewers and sewage treatment plant operators, New York University in cooperation with the Municipal Training Institute of New York State, New York City, March 27-29.

Oral Arguments Heard In High Point Case

Oral arguments in an appeal by the city of High Point, N. C. of restraining orders, which halted construction of a $6,500,000 hydro-electric project on the Yadkin River, were heard in the North Carolina State Supreme Court Feb. 29 and March 1. The appeal has been taken under advisement by the court. Two cases are being studied, one brought by Yadkin County commissioners and the second by High Point taxpayers and the Duke Power Co.

In the case brought by Yadkin County, the issues are whether the city acted with authority in obtaining a license from the Federal Power Commission and whether it has authority to condemn public lands in the county for construction of dam and reservoir.

Principal issues in the second case are whether the city has authority to incur debt for the project, which was to have been financed with a PWA loan and grant; whether issuing bonds by the city for the work are revenue bonds, and thus not within the city's debt limitation; and whether the city must obtain a certificate of convenience and necessity for the project from the North Carolina utilities commission.

The cases now before the court mark the third time that the project has been to the state supreme court. In the first suit, brought to restrain the construction of the dam, the city of High Point lost the case on the grounds that the project took in too much territory. In the second case, after the city had amended its plans, it won its case.

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North Carolina to Spend $2,000,000 Repairing Roads

Two million dollars has been allocated from the North Carolina state highway fund surplus for repairing roads damaged by recent snow, excessive rains and sub-zero weather. In addition $163,000 has been set aside from the state highway and public works commission for "emergency" repairs to the Wright Memorial Bridge across Currituck Sound, which is said to be in a "dangerous condition."

The long trestle bridge was damaged recently when ice floes piled up against the structure (*ENR* Feb. 8, 1940 p. 199). Hardly had repairs been completed, when a barge broke loose during a storm and tore out ten pile bents and damaged a 70-ft. length of the structure (*ENR* Feb. 29, 1940, p. 298). The work will include placement of a hydraulic fill at the eastern end of the bridge in Dare County to shorten the bridge by 1,500 ft. This work will probably be let to a contractor, but the remainder of the work is expected to be done by the highway maintenance forces.

Contract Limits Prevent Bidding on New York Job

No bids were received on the original invitation for construction of a million dollar Borough Hall for Queens, New York City when they were called for Feb. 26. Terms of the invitation required completion Oct. 1, later changed to Oct. 19, of a new building to house the offices of the Borough of Queens. Prospective bidders claimed it was practically impossible to meet this date and requested a revision to Dec. 15. When this was not granted they advised the city they would not bid as the damage clauses for failure to complete were more drastic than they would assume.

To prevent delay Irving V. A. Huie, commissioner of public works, asked Geo. A. Fuller Co. and Turner Const. Co. for informal proposals. Fuller agreed to fulfill the contract at a guaranteed maximum cost of $1,193,517, the city to receive full savings if the cost to the contractor, including an agreed fee, was less than the fixed maximum. Interested contractors stated that the work could be done for $200,000 less than the Fuller bid if the time were extended. The board of estimate agreed to accept bids March 1 for completion Dec. 15, resulting in submission of ten bids ranging from $847,333 to $978,000. Award was made to the second low bidder, O'Driscoll and Grove, Inc., New York City for $856,000.

LONG GIRDERS USED FOR RAILROAD CROSSING OF LOS ANGELES RIVER

AN UNUSUAL 385-ft. continuous plate girder railroad bridge, having two spans each 192½ ft. in length, has been put in service at Los Angeles by the Southern Pacific Co., to replace a crossing washed out in the floods of March 1938. The girder, thought to be the longest in the country for a railroad bridge, measures 11 ft. in depth. The largest single piece to be handled by erection crews weighed 40 tons.

The bridge destroyed in 1938 carried the main line across the Los Angeles River. The new bridge is used only as a connection between two yards as the main line was rerouted after the flood, but is used by the company's heaviest equipment.

CONTRACT UNIT PRICES

What contractors are bidding on different kinds of construction work

DREDGING AND BRIDGE CONSTRUCTION, MICHIGAN

OWNER: Department of Public Works, Detroit, Mich.; George R. Thompson, city engineer.

PROJECT: Constructing Fox Creek wall (sec. 2) involves removing of old concrete sheet piling wall and erection of new steel sheeting wall. Dredging includes removal of 36,500 c.y. of sand silt and clay from channel. Existing Korte Avenue Bridge to be removed and new span, piling (steel bearing) and wing walls to be constructed.

CONDITIONS: All materials to be furnished by contractor and project to be completed in one year after notification of award. Rail and highway transportation facilities available. Wages prevailing are: skilled, $1.50 per hr.; semi-skilled, $1.00; and common labor, 60 to 75c. per hr.

BIDS: Thirteen bids were received January 12, 1940, ranging from the low of $307,106 to $422,567.

LOW BIDDERS:

1. Bryant & Detwiler Co., Detroit, Mich.....$307,106
2. J. T. Poupore, Grosse Point Park, Mich.... 307,293
3. L. W. Lamb, Holland, Mich..... 322,722

FOX CREEK WALL

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Type B wall, incl. sheeting	3,313 l. f.	$47.40	$45.50	$42.00
2. Rd. timber piles, 50-ft. long, vert.	47,350 l. f.	.38	.53	.55
3. Rd. timber piles, 60-ft. long, vert.	56,820 l. f.	.38	.53	.55
4. Rd. timber piles, 70-ft. long, batter	44,100 l. f.	.60	.72	.80
5. Load tests for piles	2 ea.	1,200.00	400.00	1,000.00
6. Remove exist. conc. sheet piling	3,313 l. f.	1.00	.60	1.00
7. Creek dredging	36,500 c. y.	.90	.80	.60
8. Reconstruct street catch basins	8 ea.	40.00	60.00	100.00
9. Engineers field office	L.S.	1,000.00	2,800.00	4,500.00

KORTE AVE. BRIDGE RECONSTRUCTION

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Remove existing bridge	L.S.	$4,500.00	$3,000.00	$5,000.00
2. Erect new bridge, excl. wing walls, street walls and steel brg. piles	L.S.	16,000.00	2,500.00	25,000.00
3. Steel bearing piles	2,172 l. f.	2.70	2.82	3.00
4. Wing walls, excl. rd. timber piles	176 l. f.	60.00	78.00	68.00
5. Rd. timber piles, 30-ft. long, vertical	840 l. f.	.75	.53	.55
6. Rd. timber piles, 50-ft. long, vertical	5,800 l. f.	.40	.53	.60
7. Rd. timber piles, 50-ft. long, batter	1,300 l. f.	.80	.72	.80
8. Rd. timber piles, 70-ft. long, batter	2,380 l. f.	.60	.72	.85
9. Street walls, west approach	2 ea.	900.00	1,100.00	1,500.00

CHANNEL IMPROVEMENTS CALIFORNIA

OWNER: U. S. Engineer Office, Los Angeles District, Los Angeles, Calif.; Lt. Col. E. C. Kelton, district engineer.

PROJECT: Improving 1.6 miles of Los Angeles River channel, from Downey Road to Atlantic Ave. in the city of Vernon and adjacent unincorporated area of Los Angeles County, Calif. Involves grading, excavation, paving of slopes, reinforced concrete structures, and side drainage structures.

CONDITIONS: Government to furnish cement and aggregates and contractor to furnish balance of materials. Project to be completed in 240 calendar days after April 1, 1940. Rail and highway transportation facilities available. Work subject to hazard of high water at any time between October and May of any year. Job will be under construction during one rainy season. Wage rates stipulated are: skilled, $1.50 per hr.; semi-skilled, $1.00 per hr.; and common labor, 62½c. per hr.

BIDS: Thirteen bids were received Feb. 8, 1940, ranging from the contract low of $865,678 to $1,283,171. Engineer's estimate, $1,162,700.

LOW BIDDERS:

1. Rohl-Connolly Co., Los Angeles, Calif. (contract) $865,678
2. Macco Constr. Co., and Case Constr. Co., Clearwater, Calif. 919,683
3. Oswald Bros., Los Angeles, Calif..... 958,928

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Remove exist. round wood piles	3,200 ea.	$0.50	$3.00	$3.00
2. Remove exist. struct. and obstruct.	L.S.	3,000.00	115.00	5,000.00
3. Channel excav., unclassified	415,000 c. y.	.25	.26	.27
4. Toe excavation, unclassified	113,400 c. y.	.22	.26	.20
5. Struct. excav., unclass.	8,900 c. y.	1.00	.75	.75
6. Stockpile excav. mat'l. for future work	37,500 c. y.	.20	.04	.10
7. Backfill and fill, uncompact.	37,400 c. y.	.10	.03	.10
8. Backfill and fill, compacted	116,000 c. y.	.20	.13	.25
9. Cr. gravel or cr. rock backfill	25,700 c. y.	.60	.60	.75
10. Gravel in filter, drain, misc.	160 c. y.	2.00	1.00	2.00
11. 12-in. grouted rock paving	8,204 sq.	18.50	24.50	25.00
12. Derrick stone, 1 to 3 ton Cl., toe protection	62,400 c. y.	2.50	3.35	3.25
13. Derrick stone, 1 to 3 ton Cl., temp. rock protect	370 c. y.	2.50	4.00	3.25
14. Derrick stone, 1 to 7 ton Cl. rock aprons	14,500 c. y.	3.20	3.35	3.25
15. Quarry run rock, toe protect.	5,800 c. y.	1.00	2.00	1.50
16. Concrete, slope paving toe	4,770 c. y.	3.00	2.80	2.50
17. Conc., parapet and training wall footings	1,810 c. y.	9.00	4.80	3.50
18. Conc., parapet and training walls	1,780 c. y.	14.00	9.20	8.00
19. Concrete, slope paving	4,600 c. y.	4.00	4.00	4.00
20. Conc., channel invert slabs	2,100 c. y.	4.00	3.60	3.00
21. Conc., for grouting derrick stone	16,900 c. y.	3.10	2.00	2.00
22. Conc., side drnge., misc. struct.	450 c. y.	14.00	13.00	10.00
23. Drilling holes, concrete	110 l. f.	1.00	3.00	1.00
24. Grouting anchors	92 ea.	1.00	1.00	1.00
25. Reinforcing steel	1,540,000 lb.	.032	.034	.028
26. Expan. joint sleeves	1,365 ea.	.25	.40	.35
27. Flexible metal guardrail	543 l. f.	1.00	1.50	1.40
28. Steel sheet piling, 22 lb./s. f.	94,200 s. f.	1.10	.90	1.00
29. Steel sheet piling, 32 lb./s. f.	390 s. f.	1.60	2.50	2.00
30. 12-in. open joint drains	530 l. f.	1.00	1.00	.75
31. 18-in. corr. met. pipe	210 l. f.	2.50	1.80	3.00
32. 24-in. corr. met. pipe	336 l. f.	3.50	3.00	4.00
33. 18-in. autom. drainage gate	1 ea.	70.00	50.00	60.00
34. 24-in. autom. drainage gate	6 ea.	85.00	80.00	75.00
35. Cono bridge railing and pile cap	32 l. f.	50.00	15.00	15.00
36. Plant mixed surfacing	17,100 s. y.	.50	.60	.50
37. Channel fencing	9,550 l. f.	.40	.40	.33

GRADE ELIMINATION OHIO

OWNER: Ohio State Highway Department, Columbus, with New York Central Railroad. R. S. Beightler, State Highway Director, Columbus, Ohio.

PROJECT: Constructing grade crossing elimination structures, Sections F and G of Lima-Kenton Rd., State Highway No. 128, U. S. Route 30-S in Pleasant Township, Hardin County. Consists of highway overhead structure with continuous steel beams and concrete deck and substructure, grading, drainage, reinforced-concrete paving and roadside improvement. Length 0.511 mi.; pavement 22-ft. wide, roadway 42-ft.

CONDITIONS: Project to be completed by June 30, 1941. Rail and highway transportation facilities available. Wage rates stipulated are: skilled, $1.00 to $1.50 per hr.; semi-skilled, 65c. to $1.30; and common labor, 50c. per hr.

BIDS: Eleven bids were received Nov. 28, 1939, ranging from the contract low of $113,342 to $129,705. Engineer's estimate, $130,770.

(*Contract Unit Prices continued on page 14*)

OBITUARY

JOHN A. DUNFORD, bridge engineer of the city of Seattle, Wash., died Feb. 25 at the age of 63. An authority on the design, operation and maintenance of movable bridges, Dunford was also well known as the first engineer to adopt the open steel mesh decking for bridge flooring. This first installation, the University Ave. Bridge (*ENR*, Oct. 12, 1933, p. 439) was followed by several others in Seattle and was the first of other installations in all parts of the country.

GRANBERRY JACKSON, SR., 66, for several years civil engineering instructor at Vanderbilt University and consulting engineer of Nashville, Tenn., died Mar. 1 in that city. Following graduation from Vanderbilt, Jackson worked as engineer on various waterworks projects, sewage disposal systems, and power plants in the South.

ROBERT W. PRIESTMAN, city engineer of the city of Lawrence, Mass., for the last 20 years, died Mar. 4 in that city at the age of 69.

ARTHUR E. NORTON, 63, for 39 years a member of the engineering faculty of Harvard University and lately the Gordon McKay professor of applied mechanics, died in Cambridge Feb. 24. Norton was educated at Brown University.

JAMES W. SINGLETON, 76, employed for many years by the U. S. Engineers, died Feb. 26 at Asheville, N. C., where he had been living since retirement a year ago. With the U. S. Engineers he was employed at Columbus, Ga., Florence, Ala., and Memphis, Tenn.

MAURICE BLUMENTHAL, building contractor and consulting engineer of Brooklyn, N. Y., died in Brooklyn Feb. 27 at the age of 52. Blumenthal served as an engineer on the construction of the Pennsylvania R. R. tunnels under the East River.

Other recent deaths include: MARK BROWN, 64, construction engineer with the Seaboard Power Co., Glace Bay, N. S.; CLYDE F. CAMBER, civil engineer who worked on railway construction in various parts of Canada and the United States, Woodstock, N. B.; HAMILTON R. ZINK, 83, retired building contractor of Nashville, Tenn.; EDWARD BERNDT, JR., building contractor and president of the Rochester Home Builders Association, Rochester, N. Y.; THOMAS G. FINNEY, 45, superintendent in charge of bridges and buildings of the Chattanooga division of the Nashville, Chattanooga and St. Louis R. R., Chattanooga, Tenn.; CHARLES B. STEARNS, 64, retired highway contractor of North Olmsted, Ohio, Elyria, Ohio; CHARLES H. STAMEY, 30, construction foreman for the Asheville Construction Co., Morgantown, N. C.; JESSE HALL, 69, construction engineer with the Columbus & Southern Ohio Electric Co. for 25 years, Columbus, Ohio; GEORGE L. LYTLE, 61, contractor of western North Carolina, Asheville, N. C.; and EDWIN B. PFLUEGER, Nebraska State Highway Department, Lincoln.

CONTRACTS AND CAPITAL

ENGINEERING construction awards for the week total $39,308,000, an increase of 7 per cent over the volume reported for the corresponding 1939 week.

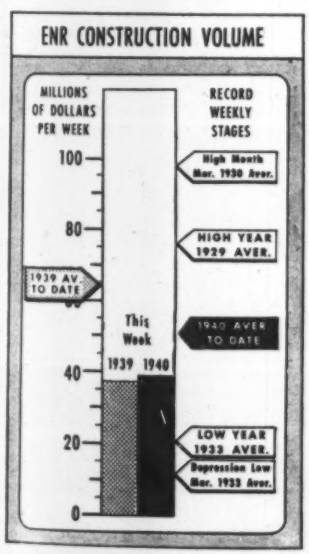
The current week's volume brings 1940 construction to $502,213,000, a level 21 per cent below the $637,716,000 reported for the initial 10-week period last year. Private awards for the period, $171,205,000, are 12 per cent higher than a year ago.

Private construction for the week, $14,931,000, tops the 1939 week by 62 per cent. Public construction, however, is 11 per cent lower than the week a year ago.

In the classified construction groups, waterworks, industrial and commercial buildings, earthwork and drainage, and streets and roads top their respective values for the week last year. Waterworks, industrial and commercial buildings, and unclassified construction exceed their totals for the short preceding week.

New capital for construction purposes for the week totals $8,392,000, a drop of 77 per cent from the volume for the corresponding 1939 week. The week's new financing is made up of $6,917,000 in state and municipal bonds, $1,459,000 in corporate security issues, and $16,000 in RFC loans for public improvements.

New construction financing for the year to date, $184,845,000, is 61 per cent lower than the $470,465,000 reported for the 10-week period last year when federal funds for WPA construction swelled the total.



CONTRACTS

(Thousands of dollars)

	Week Ending Mar. 9 1939	Feb. 29 1940	Mar. 7 1940
Federal	$3,748	$8,714	$2,392
State & Municipal	23,582	38,736	21,985
Total public	$27,330	$47,450	$24,377
Total private	9,245	11,644	14,931
TOTALS	$36,575	$59,094	$39,308
Cumulative 1940 (10 weeks)			$502,213
1939 (10 weeks)			$637,716

Note: Minimum size projects included are: Waterworks and waterways projects, $15,000; other public works, $25,000; industrial building, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1939 10 Wks.	1940 10 Wks.
NON-FEDERAL	$196,965	$184,845
Corp. securities	31,837	33,634
State & Mun.	123,978	89,848
R.E.A. loans	15,631	.....
U.S.H.A. loans	25,474	60,786
R.F.C. loans	45	577
FEDERAL	$273,500	$.....
TOTAL CAPITAL	$470,465	$184,845

FHA MORTGAGES

	Week Ending Mar. 4 1939	Feb. 24 1940	Mar. 2 1940
Selected for appraisal	$26,267	$18,352	$25,483*
Cumulative 1940 (9 weeks)			$159,861*
1939 (9 weeks)			$177,791

* Subject to revision.

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Feb., '40	238.32	114.56
Building Cost	Feb., '40	201.50	108.93
Volume	Jan., '40	173	76

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Toll Collection Void On Western Parkway

► Collection of a 10-cent toll on the Hutchison River Parkway, Westchester County, N. Y., was voided by the State Court of Appeals March 5, the court ruling that because of its use as an express highway the parkway had become a public thoroughfare on which tolls are prohibited by the state vehicle and traffic law.

A total of $279,160 had been collected since Aug. 31, 1939; tolls now to be refunded to those who saved their receipts.

(Continued Unit Prices continued from page 12)

LOW BIDDERS:

1. Purdy Constr. Co., Mansfield, Ohio (contract) . $113,342
2. J. W. Harper, Napoleon, Ohio 114,834
3. Ohio State Constr. Co., Columbus, Ohio 115,876

ROADWAY

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Roadway excavation, unclass	1,094 c. y.	$0.35	$0.40	$0.55
2. Remove trees and stumps	26 ea.	8.00	5.00	6.90
3. Water	286 M gal.	2.25	2.00	1.725
4. 12-in. pl. cem. conc. pipe or V. S. pipe, storm sewers	108 l. f.	1.16	.70	2.70
5. 8-in. pl. cem. conc. pipe or extra qual. drain tile, or V. S. pipe	1,817 l. f.	.70	.40	1.50
6. 8-in. rein. conc. pipe, rdwy. drnge	27 l. f.	1.28	1.00	1.61
7. 18-in. pl. cem. conc. or V. S. pipe	790 l. f.	1.68	1.50	3.45
8. 8-in. by 8-in. T pipe spec	8 ea.	4.00	1.50	3.45
9. 12-in. by 8-in. reducer pipe spec	1 ea.	4.00	3.00	5.75
10. 8-in. 30 deg. bend pipe spec	2 ea.	4.00	2.50	2.30
11. 12-in. L pipe spec	1 ea.	6.00	3.50	4.60
12. 8-in. by 18-in. Y pipe spec	1 ea.	9.00	5.50	9.20
13. 18-in. by 18-in. Y pipe spec	1 ea.	12.00	7.50	9.20
14. Std. No. 1-2 catch basin	6 ea.	40.00	45.00	63.25
15. Std. No. 2-2 catch basin	2 ea.	40.00	45.00	69.00
16. Std. No. 7 catch basin	4 ea.	30.00	40.00	46.00
17. Std. No. 9-A catch basin	4 ea.	125.00	125.00	86.25
18. 4-in. crushed stone sidewalk	6,372 s. f.	.04	.04	.023
19. Std. strength flexible steel guard rail	4,000 l. f.	.90	.90	1.04
20. Abandon catch basin	1 ea.	20.00	5.00	17.25

PAVEMENT

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Spread, shape and compact	339 s. y.	$0.10	$0.25	$0.1725
2. Completed mixture delivered, (mixed with chemical)	37.7 ton	2.50	3.00	1.725
3. Completed mix. del'd. (not mixed with chemical)	75.4 ton	2.00	3.00	1.725
4. Calcium chloride	0.1 ton	30.00	50.00	40.00
5. Traffic compacted surf. crse	309 c. y.	1.60	2.00	1.10
6. Reinf. Portland cem. conc. pavmt	5,771.1 s. y.	1.96	2.00	1.85
7. Type 5-A conc. curb	4,660.5 l. f.	.12	.20	.115
8 Reinf. conc. approach slab	122.2 s. y.	6.60	6.00	2.82

STRUCTURES

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Struct. excav., unclassified	408 c. y.	$1.50	$1.25	$1.15
2. Remove portion exist. struct	L.S.	100.00	50.00	34.50
3. Bitum. corr. met. pipe or rein. conc. pipe, culverts, 12-in	214 l. f.	1.50	1.40	1.725
4. As above, 18-in	208 l. f.	2.10	2.25	2.36
5. 18-in. 14-ga. paved bit. coated corr. met. pipe	56 l. f.	2.20	2.50	2.07
6. 18-in. c. i. pipe	50 l. f.	6.00	6.50	5.70
7. Std. No. 1-2 catch basin	3 ea.	40.00	45.00	50.00
8. Std. No. 2-2 catch basin	1 ea.	40.00	45.00	55.00
9. Std. No. 2-3 catch basin	2 ea.	50.00	65.00	62.10
10. Std. No. 9-A catch basin	4 ea.	125.00	125.00	69.00
11. Abandoned catch basins	2 ea.	20.00	5.00	9.20
12. 12 x 12-in Y pipe spec., culv	1 ea.	11.00	7.50	5.75
13. 12 x 18-in. Y pipe spec., culv., ex. str	1 ea.	14.00	7.50	7.50
14. 8 x 18-in. T pipe spec., culv	1 ea.	12.00	6.25	7.50
15. 12-in. L pipe spec., sewer	2 ea.	6.00	7.50	4.60
16. 12-in. 30-deg. bend pipe spec	1 ea.	4.00	7.50	4.60
17. Remove and store 18-in. pipe	62 l. f.	.40	.50	.575
18. 12-in. paved bitum. coated corr. met. pipe, sewer	90 l. f.	2.00	1.50	1.85
19. Plain cem. conc. pipe, 8-in. or ext. qual. drain tile	418 l. f.	.60	.50	.425
20. Plain cem. conc. pipe or vit. sew. pipe, rdwy. drainage	63 l. f.	1.16	.80	.70

ROADSIDE IMPROVEMENT

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Riprap, tree protection	7 s. y.	$4.00	$2.00	$4.60
2. Aggregate, tree aeration	12 c. y.	3.00	2.50	2.30
3. Furn. and place topsoil	5,525 s. y.	.08	.10	.132
4. Seeding, No. 1	5,525 s. y.	.04	.035	.057
5. Seeding, No. 2	15,327 s. y.	.035	.03	.035
6. Commercial fertilizer	3,904 lb.	.06	.02	.046
7. Mulching	14,591 s. y.	.015	.04	.023
8. American elm trees, 10-12-ft	15 ea.	8.00	7.00	4.31
9. Oriental or European Planetree	23 ea.	6.00	8.00	4.31
10. Washington Thorn or Hawthorn	13 ea.	8.00	8.50	6.33
11. Hall Japanese honeysuckle, 2 years	2,315 ea.	.65	.40	.2875
12. Pruning existing trees, 20-in. dia	3 ea.	15.00	10.00	5.75
13. Sodding	835 s. y.	.30	.25	.29

HIGHWAY OVERHEAD STRUCTURE

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Struct. excav., unclassified	1,829 c. y.	$2.00	$1.50	$1.15
2. Class C conc., superstr	320 c. y.	18.00	19.00	18.00
3. Class C conc., walls	700 c. y.	18.00	19.00	12.20
4. Class E conc., footings	390 c. y.	13.00	12.50	9.50
5. Type B waterproofing, 36-in. wide	58 s. y.	1.50	1.50	1.07
6. Reinforcing steel	156,200 lb.	.05	.05	.0391
7. Struct. steel, incl. wrght. iron blast plates	298,000 lb.	.053	.055	.05
8. Field painting str. steel	298,000 lb.	.003	.003	.00227
9. ½-in. cast leaded bronze sliding plates	420 lb.	.50	.60	.60
10. Bridge railing (conc. type RR-12)	641 l. f.	3.00	3.00	3.75
11. Paved gutter, grouted stone	500 l. f.	1.25	1.75	1.725

RAILROAD CONTRACT WORK

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Brick catch basin, A	1 ea.	$100.00	$110.00	$63.25
2. 36-in. cast iron pipe	46 l. f.	20.00	20.00	25.30
3. Riprap, 10-in. min. thickness	4 s. y.	2.00	2.00	2.88
4. Sheeting and pumping	L.S.	600.00	950.00	57.50
5. Brick catch basin, B	1 ea.	100.00	100.00	63.25
6. Timber grillage	2,048 f.bm.	.10	.05	.138
7. 30-in. cast iron pipe, culv. 707	12 l. f.	16.00	15.00	15.53
8. 30-in. cast iron pipe, culv. 708	8 l. f.	16.00	15.00	15.53
9. Excavation, lowering railroad	84,340 c. y.	.32	.31	.437
10. Erect, maintain lights, signs, barricades	L.S.	200.00	200.00	639.34
11. Industrial insurance premium	L.S.	1.00	1,900.00	2,410.00

LEVEE WORK, CALIFORNIA

OWNER: U. S. Engineer Office, 208 Post Office Bldg., Sacramento, Calif.

PROJECT: Enlarging, raising, strengthening and setting back existing levees along West levee of Feather River from Shanghai Bend south to Starr Bend; enlarging, raising and strengthening along West levee 2 miles southerly from Starr Bend to opposite Bear River.

CONDITIONS: Materials to be furnished by contractor and both parts of job to be completed by Oct. 31, 1940. Wage rates specified are: skilled, $1.10 to $1.50 per hr.; semi-skilled, 77 to 90c.; and common, 62½c. per hr.

BIDS: Work was divided into two parts, Part A from Shanghai Bend to Starr Bend, and Part B from Starr Bend to Bear River. Two bids were received on Part A, $363,362 and $375,215. Five bids were received on Part B, ranging from $96,979 to $112,049. Contract was awarded, however, on combination bid of $430,298 to low bidder. Five bids on combination were opened December 5, 1939. High was $708,193.

LOW BIDDERS:

1. Morrison-Knudsen Co., Inc., Los Angeles, Calif. (contract) $430,298
2. Hemstreet & Bell, Marysville, Calif. 454,149
3. Granfield, Farrar & Carlin, San Francisco, Calif. 511,179

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Levee embankment	2,299,000 c. y.	$0.1675	$0.172	$0.195
2. Water	66,380 M gal.	.50	.70	.75
3. Road gravel	1,650 c. y.	1.75	2.00	1.75
4. Class A concrete	52 c. y.	30.00	25.00	30.00
5. Reinforcing steel	4,400 lb.	.08	.05	.06
6. Timber	300 f. bm.	.10	.08	.10
7. 6-in. steel pipe	170 l. f.	1.20	1.50	1.25
8. 8-in. steel pipe	1,030 l. f.	1.50	1.80	1.50
9. 24-in. steel pipe	122 l. f.	4.50	4.00	4.50
10. 36-in. steel pipe	48 l. f.	12.50	13.00	12.50
11. Corr. iron pipe, 16-ga., 18-in	120 l. f.	2.25	2.80	2.50
12. Corr. iron pipe, 12-ga., 36-in	90 l. f.	7.00	6.50	8.00
13. Corr. iron pipe, 10-ga., 60 in	60 l. f.	15.00	14.00	15.00
14. 24-in. air valve covers	7 ea.	14.00	15.00	15.00
15. 24-in. air valve covers	2 ea.	16.50	17.00	20.00
16. 30-in. irrigation gates	4 ea.	55.00	50.00	70.00
17. 30-in. lateral head gates	4 ea.	43.00	40.00	40.00
18. Iron cut-off plates, 3 x 4-ft. by ½-in.	7 ea.	13.00	13.00	15.00
19. Iron cut-off plates, 3½ x 4-ft. by ½-in.	1 ea.	15.00	15.00	20.00
20. Iron cut-off plates, 4½ x 5-ft. by ½-in.	1 ea.	21.00	20.00	25.00
21. 1-in. brass cocks	7 ea.	2.00	2.00	2.50
22. 2-in. brass cocks	2 ea.	5.50	7.50	7.00
23. 1-in. air valves	7 ea.	29.00	25.00	25.00
24. 2-in. air valves	2 ea.	55.00	50.00	50.00
25. Remove, save 12-in. iron pipe, etc	L.S.	95.00	150.00	300.00
26. Remove conc. pipe saddles, etc	L.S.	350.00	200.00	450.00
27. Remove 12-in. pipe and gate	L.S.	65.00	50.00	100.00
28. Remove, save 6, 8 and 10-in. pipe	L.S.	100.00	250.00	200.00
29. Remove, save 24-in. pipe	L.S.	225.00	200.00	250.00
30. Remove 24-in. pipe	L.S.	25.00	50.00	60.00
31. Remove, save 190-ft steel pipe, etc	L.S.	125.00	250.00	150.00
32. Remove conc. cut-off walls, etc	L.S.	400.00	300.00	800.00
33. Remove comb. conc. and wood culv	L.S.	125.00	50.00	170.00